

FLENDER COUPLINGS

FASTEX

Compact assembly and operating instructions 3910en

Edition 05/2022

FASTEX EC210

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FASTEX EC210 Clamping elements 3910en


Compact assembly and
operating instructions


Introduction	1
Description	2
Application planning	3
Assembly	4
Disassembly	5
Disposal	6
Services and support	7
Technical data	A


Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken

 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.

 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Flender products

Note the following:

 WARNING
Flender products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Flender. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Flender GmbH. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Table of contents

1	Introduction	5
1.1	Main operation instructions	5
1.2	General information	5
1.3	Intended use	6
1.4	Safety instructions for a clamping element for use in potentially explosive atmospheres	6
2	Description	7
3	Application planning	8
3.1	Transport of the clamping element.....	8
3.1	Storage of the clamping element.....	8
4	Assembly	9
4.1	Assembling the clamping element.....	10
5	Disassembly	11
6	Disposal	12
7	Service und support	12
A	Technical data	13
A.1	Geometry data and tightening torques	13

Tables

Table 1-1	General warnings	5
Table 4-1	Recommended assigned fits	9
Table 7-1	Geometry data, weights, tightening torques.....	14

Figures

Figure 2-1	Construction of the clamping element FASTEX EC210.....	7
Figure 4-1	Fit assignment	9
Figure 7-1	Parts overview FASTEX EC210.....	13

1 Introduction

1.1 Main operation instructions

These instructions are only valid in conjunction with the associated operating instructions from the component supplier.

1.2 General information

Instructions











Notice the information and regulations in these installation instructions and in the main operating instructions from the component supplier.

Please make sure that every person who is commissioned to work on the clamping element has read and understood these instructions prior to handling the clamping element and observes all of the points.

Only the knowledge of these instructions can avoid faults on the clamping element and ensure fault-free and safe operation. Non-adherence to the instructions can cause product or property damage or personal injury. Flender does not accept any liability for damage or operating failures that are due to non-adherence to these instructions.

Symbols

Table 1-1 General warnings

ISO	ANSI	Warning
		Warning - hazardous electrical voltage
		Warning - explosive substances
	---	Warning - entanglement hazard
	---	Warning - hot surfaces
	---	Warning - substances that are harmful to health or are irritants
	---	Warning - corrosive substances
	---	Warning - suspended load
	---	Warning - hand injuries
		ATEX certification

Explanation regarding Machinery Directive 2006/42/EG

The clamping elements described here are components in accordance with the Machinery Directive and do not require a declaration of incorporation.

Work on the clamping element

Only carry out work on the clamping element when it is not in operation and is not under load. Secure the drive unit against being switched on accidentally. Attach a notice to the switch stating clearly that work is being carried out on the clamping element. Ensure that the entire unit is not under load..

1.3 Intended use

Only use the clamping element according to the conditions specified in the service and delivery contract and the technical data in the annex. Deviating operating conditions are considered improper use. The user or owner of the machine or plant is solely liable for any resulting damage.

When using the clamping element please specifically observe the following:

- Do not make any modifications to the clamping element that go beyond the permissible machining described in these instructions. This also applies to touch protection facilities.
- Do not use the clamping element as a torque-limiting safety element.

If you have any queries, please contact our customer service (see Service and support (Page 12)).

1.4 Safety instructions for a clamping element for use in potentially explosive atmospheres



The assembly supplier is responsible for the guideline-compliant design of the system clamping element with all associated components. In potentially explosive areas, it must be ensured that the design torque T_{Cl} according to Table 7-1 is not exceeded at any operating point. The identification and information on the conditions of use can be found in the main operating instructions of the assembly supplier.

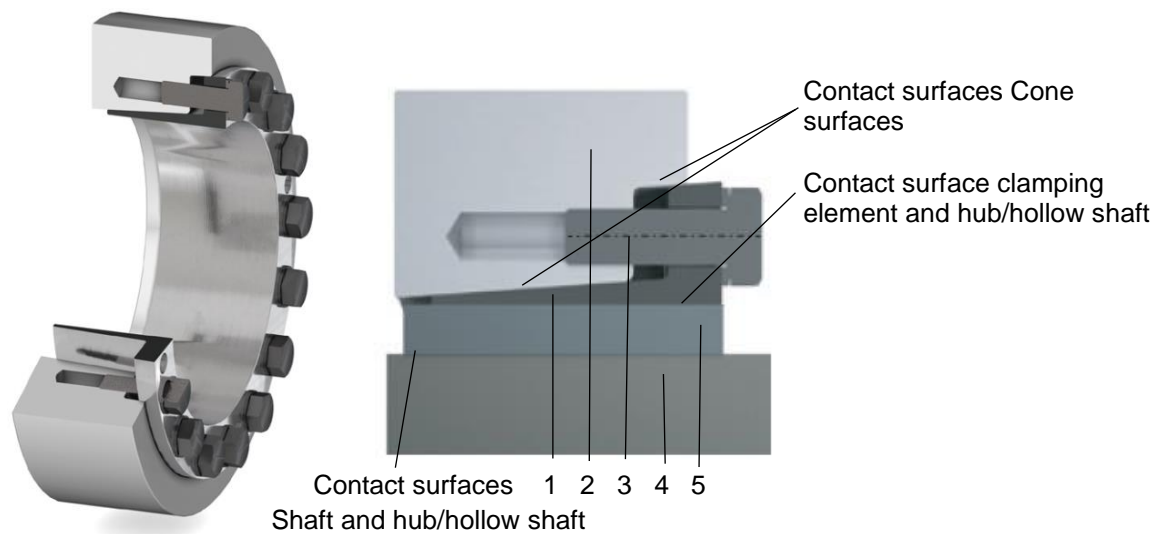
2 Description

The clamping elements described here are universally applicable, self-centering clamping elements whose function is the tensionally locked transmission of torque between shaft and hub/hollow shaft.

The installation and operation of the specified clamping elements in combination with cylindrically bored hubs is described in these instructions.

Design

Detailed information on the dimensions can be found in Appendix A Technical data (Page 13).



- 1 Inner ring
- 2 Outer ring
- 3 Hexagon head screws
- 4 Shaft
- 5 Hollow shaft/hub

Figure 2-1 Construction of the clamping element FASTEX EC210

3 Application planning

Check the delivery for damage and for completeness. Report any damage and/or missing parts to Flender immediately.

The coupling is delivered in preassembled groups. These may be dismantled.

3.1 Transport of the clamping element



WARNING

Severe personal injury due to improper transport

Severe personal injury due to falling components or due to crushing. Damage to clamping element parts possible due to use of unsuitable transport means.

- Only use lifting gear and load suspension devices with sufficient load bearing capacity for transport.
- Please observe the symbols applied on the packaging.

3.1 Storage of the clamping element

The clamping element, unless not specifically ordered otherwise, is supplied with preservation and can be stored for up to 12 months in a dry and dust-free storage room.

4 Assembly



DANGER

Danger due to bursting of the assembly group

If not used as intended, the assembly can burst. There is a risk of fatal injury from flying fragments. Bursting of the assembly can lead to an explosion in potentially explosive atmospheres.

- Use the clamping element as intended

Note

Information about the assembly of the clamping element

- Only use undamaged components for the assembly of the clamping element.
- Follow the assembly sequence.
- Please ensure that there is sufficient space at the assembly location and that the location is tidy and clean in order to be able to assemble and maintain the clamping element without any risk.
- If a dimension drawing has been created for the clamping element, please observe the information it contains as a matter of priority

Recommended assigned fits

In the following table you will find the permissible fits of the clamping element and the shaft.

Table 4-1 Recommended assigned fits

component	tolerance	surface quality
Shaft tolerance	h6 (DS ≤ 160 mm), g6 (DS > 160 mm)	Ra ≤ 3,2 μm
Bore tolerance	H7	Ra ≤ 3,2 μm

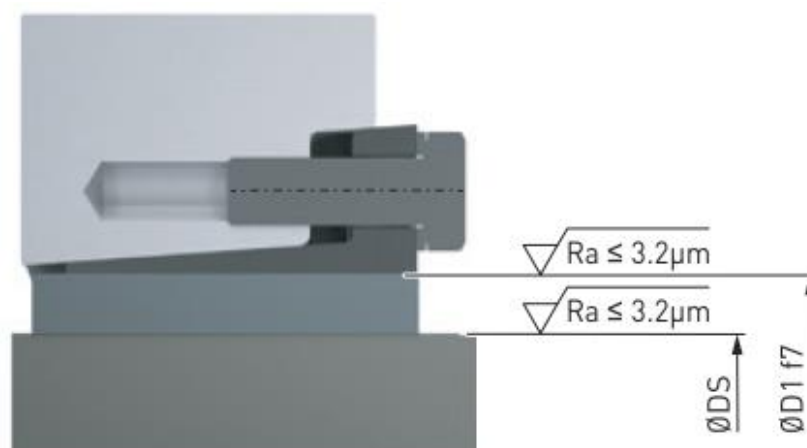


Figure 4-1 Fit assignment

4.1 Assembling the clamping element



WARNING

The design torque T_{C1} must not be exceeded at any operating point. It must be ensured that the cylinder head bolts are tightened with the tightening torques according to Table 7-1

Preparatory work

1. Make sure the surfaces to be joined are in perfect condition.
2. Reused clamping sets must be disassembled and cleaned before being used again. The conical surfaces and threads must be greased with Molykote MoS2. When using Geomet-coated hexagonal screws (3), the threads and the hexagonal screws (3) must not be greased with Molykote MoS2.
3. Clean the contact surfaces as well as the shaft and hub.
4. The contact surface between shaft (4) and hub/hollow shaft (5) must not be oiled or greased. The contact surface between the clamping set and the hub/hollow shaft may be greased.
5. Place the outer ring (2) on the inner ring (1).
6. Screw the outer ring (2) and the inner ring (1) together without tightening the hexagon head screws (3).

Assemble

1. Position the preassembled clamping element on the hollow shaft/hub (5) and then guide both parts onto the shaft (4).
2. Tighten the hexagon head screws (3) slightly so that the clamping element can still be moved.
3. Align the clamping element on the shaft (4).
4. The shaft must fill the entire length of the clamping set.
5. Tighten the hexagon head screws (3) one after the other in several turns until the inner ring (1) is aligned with the outer ring (2). The prescribed tightening torque can be found in the section Tightening torques and wrench sizes.

5 Disassembly

Procedure

1. Loosen and remove all hexagon head screws (3) one after the other.
2. Screw separate screws (Table 7-1) into the forcing threads of the inner ring (1) and tighten them evenly in sequence until the inner ring (1) and outer ring (2) come loose from each other.
3. Remove the clamping set with the hollow shaft/hub (5) from the shaft (4). Use suitable lifting devices for this purpose.
4. Remove the clamping set from the hollow shaft/hub (5). Use suitable lifting devices for this purpose.

When reinstalling the clamping element please observe the information in the chapter Assembly (Page 10).

6 Disposal

Dispose of the clamping element parts according to applicable national regulations or recycle them.

7 Service und support

When ordering spare parts, requesting a customer service technician or in the case of technical queries, please contact our factory or one of our customer service addresses:

Flender GmbH

Schlavenhorst 100

46395 Bocholt

Deutschland

Tel.: +49 (0)2871/92-0

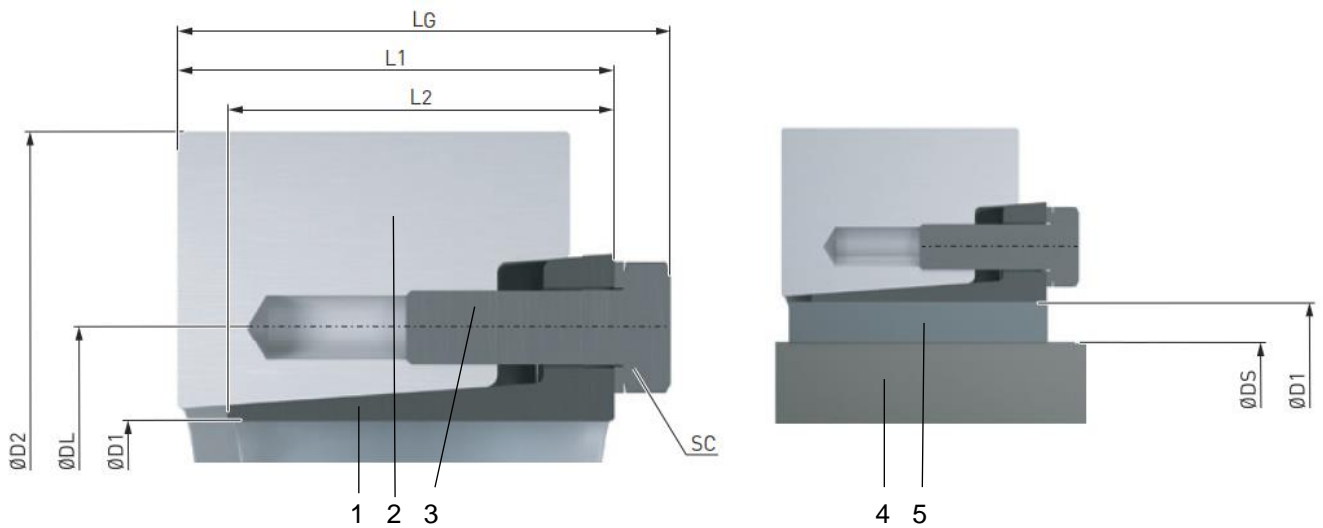
Fax.: +49 (0)2871/92-2596

Flender GmbH (<http://www.flender.com>)

A Technical data

A.1 Geometry data and tightening torques

In this section you can find dimension drawings and technical data for the Flender clamping elements.:



- 1 Inner ring
- 2 Outer ring
- 3 Hexagon head screws
- 4 Shaft
- 5 Hollow shaft/hub

Figure 7-1 Parts overview FASTEX EC210

Table 7-1 Geometry data, weights, tightening torques

Size	Dimensions					Limit Torque	hexagon head screw DIN EN ISO 4017 - 12.9					Weight
							Screw size	Tightening torque	Quantity	Screwlength	widht A/F	
D ₁ x D ₂	D _s	DL	L _G	L ₁	L ₂	T _{Cl}	SC	T _A		L _s	SW	m
mm	mm	mm	mm	mm	mm	Nm	mm	Nm		mm	mm	kg
16 x 41	13	28	19,5	15,5	13,5	70	M6	13	3	12	10	0,1
	14	28	19,5	15,5	13,5	90	M6	13				0,1
18 x 44	15	30	19,5	15,5	13,5	80	M6	13	4	12	10	0,1
	16	30	19,5	15,5	13,5	110	M6	13				0,1
20 x 47	17	32	19,5	15,5	13,5	150	M6	13	4	12	10	0,1
	18	32	19,5	15,5	13,5	180	M6	13				0,1
24 x 50	19	36	22	18	16	165	M6	13	5	16	10	0,2
	20	36	22	18	16	225	M6	13				0,2
	22	36	22	18	16	295	M6	13				0,2
26 x 51,5	20	38	22	18	16	230	M6	13	5	16	10	0,2
	22	38	22	18	16	300	M6	13				0,2
	24	38	22	18	16	350	M6	13				0,2
30 x 60	24	44	24	20	18	370	M6	13	6	16	10	0,3
	25	44	24	20	18	420	M6	13				0,3
	26	44	24	20	18	470	M6	13				0,3
36 x 72	27	52	27,5	22	20	480	M8	30	5	20		0,5
	30	52	27,5	22	20	650	M8	30				0,5
	33	52	27,5	22	20	860	M8	30				0,5
38 x 72	27	54	27,5	22	20	480	M8	30	5	20	13	0,5
	30	54	27,5	22	20	650	M8	30				0,5
	33	54	27,5	22	20	860	M8	30				0,5
40 x 80	34	61	29,5	24	22	880	M8	30	6	20	13	0,6
44 x 80	35	61	29,5	24	22	810	M8	30	6	20	13	0,6
	37	61	29,5	24	22	960	M8	30				0,6
50 x 90	38	68	31,5	26	23,5	1150	M8	30	8	20	13	0,8
	40	68	31,5	26	23,5	1300	M8	30				0,8
	42	68	31,5	26	23,5	1520	M8	30				0,8
55 x 100	42	72	34,5	29	26	1300	M8	30	8	20	13	1,1
	45	72	34,5	29	26	1600	M8	30				1,1
	48	72	34,5	29	26	1900	M8	30				1,1
60 x 110	48	80	34,5	29	26	1700	M8	30	9	20	13	1,3
	50	80	34,5	29	26	1950	M8	30				1,3
	52	80	34,5	29	26	2160	M8	30				1,3
62 x 110	48	80	34,5	29	26	1700	M8	30	9	20	13	1,3
	50	80	34,5	29	26	1950	M8	30				1,3
	52	80	34,5	29	26	2160	M8	30				1,3
68 x 115	50	86	35	29,5	26	1900	M8	30	9	20	13	1,3
	55	86	35	29,5	26	2500	M8	30				1,3
	60	86	35	29,5	26	3150	M8	30				1,3
75 x 138	55	100	37,5	31	27	2700	M10	60	10	25	16	2,3
	60	100	37,5	31	27	3400	M10	60				2,3
	65	100	37,5	31	27	4100	M10	60				2,3
80 x 141	60	104	37,5	31	27	3300	M10	60	10	25	16	2,3
	65	104	37,5	31	27	4100	M10	60				2,3
	70	104	37,5	31	27	4950	M10	60				2,3
85 x 155	65	114	44,5	38	34	5500	M10	60	11	25	16	3,2
	70	114	44,5	38	34	6600	M10	60				3,2
	75	114	44,5	38	34	7900	M10	60				3,2
90 x 155	65	114	44,5	38	34	5500	M10	60	11	25	16	3,2
	70	114	44,5	38	34	6600	M10	60				3,2
	75	114	44,5	38	34	7900	M10	60				3,2
95 x 170	70	124	50	43,5	39	6200	M10	60	14	30	16	4,3
	75	124	50	43,5	39	7400	M10	60				4,3
	80	124	50	43,5	39	8600	M10	60				4,3
100 x 170	70	124	50	43,5	39	6200	M10	60	14	30	16	4,3
	75	124	50	43,5	39	7400	M10	60				4,3
	80	124	50	43,5	39	8600	M10	60				4,3

Size	Dimensions					Limit Torque	hexagon head screw DIN EN ISO 4017 - 12.9					Weight
							Screw size	Tightening torque	Quantity	Screwlength	widht A/F	
D ₁ x D ₂	D _s	DL	L _G	L ₁	L ₂	T _G	SC	T _A		L _s	SW	m
mm	mm	mm	mm	mm	mm	Nm	mm	Nm		mm	mm	kg
105 x 185	80	136	56,5	49	43,5	10500	M12	100	12	35	18	5,8
	85	136	56,5	49	43,5	11800	M12	100				5,8
	90	136	56,5	49	43,5	13700	M12	100				5,8
110 x 185	80	136	56,5	49	43,5	10500	M12	100	12	35	18	5,8
	85	136	56,5	49	43,5	11800	M12	100				5,8
	90	136	56,5	49	43,5	13700	M12	100				5,8
115 x 197	85	147	60,5	53	48	12500	M12	100	14	35	18	6,9
	90	147	60,5	53	48	14100	M12	100				6,9
	95	147	60,5	53	48	16000	M12	100				6,9
120 x 197	85	147	60,5	53	48	12500	M12	100	14	35	18	6,9
	90	147	60,5	53	48	14100	M12	100				6,9
	95	147	60,5	53	48	16000	M12	100				6,9
125 x 215	90	158	61	53,5	48	14500	M12	100	14	35	18	8,7
	95	158	61	53,5	48	16600	M12	100				8,7
	100	158	61	53,5	48	18800	M12	100				8,7
130 x 215	95	158	61	53,5	48	17000	M12	100	14	35	18	9,4
	100	158	61	53,5	48	18400	M12	100				9,4
	110	158	61	53,5	48	22000	M12	100				9,4
130 x 230	95	165	66,5	57,5	51	18400	M14	160	12	40	21	10,8
	100	165	66,5	57,5	51	20800	M14	160				10,8
	110	165	66,5	57,5	51	26200	M14	160				10,8
135 x 230	95	165	66,5	57,5	51	18400	M14	160	12	40	21	10,8
	100	165	66,5	57,5	51	20800	M14	160				10,8
	110	165	66,5	57,5	51	26200	M14	160				10,8
140 x 230	100	172	67	58	51	19900	M14	160	12	40	21	10,3
	105	172	67	58	51	22200	M14	160				10,3
	115	172	67	58	51	27800	M14	160				10,3
150 x 263	110	186	71	62	55	27000	M14	160	14	40	21	15,2
	120	186	71	62	55	32000	M14	160				15,2
	125	186	71	62	55	36200	M14	160				15,2
155 x 263	110	186	71	62	55	27000	M14	160	14	40	21	15,2
	120	186	71	62	55	32000	M14	160				15,2
	125	186	71	62	55	36200	M14	160				15,2
160 x 290	120	198	78,5	68,5	61	39000	M16	250	12	45	24	21,5
	130	198	78,5	68,5	61	48000	M16	250				21,5
	135	198	78,5	68,5	61	51000	M16	250				21,5
165 x 290	120	198	78,5	68,5	61	39000	M16	250	12	45	24	21,5
	130	198	78,5	68,5	61	48000	M16	250				21,5
	135	198	78,5	68,5	61	51000	M16	250				21,5
170 x 300	130	208	79	69	61	46500	M16	250	14	50	24	22,5
	140	208	79	69	61	53000	M16	250				22,5
	145	208	79	69	61	59000	M16	250				22,5
175 x 300	130	208	79	69	61	46500	M16	250	14	50	24	22,5
	140	208	79	69	61	53000	M16	250				22,5
	145	208	79	69	61	59000	M16	250				22,5
180 x 320	140	222	95	85	77,5	66000	M16	250	16	50	24	32,7
	150	222	95	85	77,5	76000	M16	250				32,7
	155	222	95	85	77,5	83000	M16	250				32,7
185 x 320	140	222	95	85	77,5	66000	M16	250	16	50	24	32,7
	150	222	95	85	77,5	76000	M16	250				32,7
	155	222	95	85	77,5	83000	M16	250				32,7
190 x 340	150	238	98	88	77,5	82000	M16	250	16	50	24	38,3
	160	238	98	88	77,5	91000	M16	250				38,3
	165	238	98	88	77,5	102000	M16	250				38,3
195 x 340	150	238	98	88	77,5	82000	M16	250	16	50	24	37,3
	160	238	98	88	77,5	91000	M16	250				37,3
	165	238	98	88	77,5	102000	M16	250				37,3
200 x 340	150	238	98	88	77,5	82000	M16	250	16	50	24	36,3
	160	238	98	88	77,5	91000	M16	250				36,3
	165	238	98	88	77,5	102000	M16	250				36,3
220 x 370	160	268	120	107,5	96,5	105000	M20	480	15	60	30	53
	170	268	120	107,5	96,5	122000	M20	480				53
	180	268	120	107,5	96,5	138000	M20	480				53

Size	Dimensions					Limit Torque	hexagon head screw DIN EN ISO 4017 - 12.9					Weight
							Screw size	Tightening torque	Quantity	Screwlength	widht A/F	
D ₁ x D ₂	D _S	DL	L _G	L ₁	L ₂	T _{Cl}	SC	T _A		L _S	SW	m
mm	mm	mm	mm	mm	mm	Nm	mm	Nm		mm	mm	kg
240 x 405	170	288	124	111	98	125000	M20	480	16	60	30	66
	180	288	124	111	98	145000	M20	480				66
	200	288	124	111	98	182000	M20	480				66
260 x 430	190	312	138	125,5	111	165000	M20	480	16	60	30	82
	200	312	138	125,5	111	190000	M20	480				82
	220	312	138	125,5	111	238000	M20	480				82
280 x 460	210	334	153	140	121	220000	M20	480	18	60	30	103
	220	334	153	140	121	245000	M20	480				103
	240	334	153	140	121	300000	M20	480				103
300 x 485	220	360	159	140	124	297000	M24	840	16	70	36	120
	230	360	159	140	124	330000	M24	840				120
	250	360	159	140	124	399000	M24	840				120
320 x 520	240	380	161	141,5	124	331000	M24	840	18	70	36	138
	250	380	161	141,5	124	365000	M24	840				138
	270	380	161	141,5	124	437000	M24	840				138
340 x 570	250	402	178	158,5	139	429000	M24	840	18	70	36	189
	260	402	178	158,5	139	469000	M24	840				189
	280	402	178	158,5	139	556000	M24	840				189
360 x 590	270	424	182	163	143	545000	M24	840	20	70	36	207
	280	424	182	163	143	592000	M24	840				207
	290	424	182	163	143	694000	M24	840				207
390 x 650	290	454	191	169	148	704000	M27	1250	18	70	41	249
	300	454	191	169	148	760000	M27	1250				249
	320	454	191	169	148	879000	M27	1250				249
420 x 670	320	486	208	186	166	827000	M27	1250	20	70	41	285
	330	486	208	186	166	876000	M27	1250				285
	350	486	208	186	166	1000000	M27	1250				285
440 x 710	340	506	220	198	179	1117000	M27	1250	21	70	41	343
	350	506	220	198	179	1190000	M27	1250				343
	370	506	220	198	179	1345000	M27	1250				343
460 x 750	360	534	223	201	179	1306000	M27	1250	21	70	41	387
	370	534	223	201	179	1386000	M27	1250				387
	390	534	223	201	179	1554000	M27	1250				387
470 x 705	370	538	242	220	200	950000	M27	1250	21	70	41	340
	380	538	242	220	200	1000000	M27	1250				340
	400	538	242	220	200	1150000	M27	1250				340
480 x 770	380	552	247	223	201	1557000	M30	1650	21	100	46	449
	390	552	247	223	201	1648000	M30	1650				449
	410	552	247	223	201	1818000	M30	1650				449
500 x 820	400	572	241	217	198	1653000	M30	1650	24	100	46	515
	410	572	241	217	198	1725000	M30	1650				515
	430	572	241	217	198	1915000	M30	1650				515

FASTEX EC210

Compact assembly and operating instructions 3910de

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